

ABSTRACT

The present invention provides an inexpensive security sensor cable, a method for manufacturing of same and an overall security system for using that sensor cable. The sensor cable consists of a central conductor, an air separator, a polyethylene dielectric tube, an outer conductor and an outer protective jacket. The central conductor is loosely centered in the coaxial cable and thus freely movable relative to the dielectric tube. The sensor cable has application either in a passive sensing system or in an active ranging sensing system to determine the location of an intrusion along the cable. For the passive sensing function, when the center conductor moves, it contacts a suitable dielectric material from the triboelectric series, such as polyethylene, which can be processed to produce a charge transfer by triboelectric effect that is measurable as a terminal voltage. In an active system, the central conductor moves within the dielectric in response to a vibration to provide an impedance change that can be sensed. Conventional radio grade cable may be modified in its construction by removing its dielectric thread to manufacture the sensor cable, thus enabling the center conductor to move freely in the air gap within the dielectric tube. An inexpensive method of manufacturing sensor cable is provided as the cable parts are readily available. Such a sensor cable is advantageous in that the passive triboelectric properties of the cable, in response to a disturbance, can provide a larger voltage response over prior art cables.